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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/554,064

10/24/2005

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EXAMINER

ENIN-OKUT, EDU E

ART UNIT

PAPER NUMBER

1795

MAIL DATE

DELIVERY MODE

08/04/2008

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/554,064	YAGETA ET AL.	
	<b>Examiner</b>	<b>Art Unit</b>	
	Edu E. Enin-Okut	1795	

**-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --**

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 24 October 2005.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-10 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-10 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 October 2005 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)            | 4) <input type="checkbox"/> Interview Summary (PTO-413)                                       |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____  |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application                             |
| Paper No(s)/Mail Date <u>10/24/05</u> .  | 6) <input checked="" type="checkbox"/> Other: <u>Machine translation of JP 2001-052748 A.</u> |



## DETAILED ACTION

### *Priority*

1. Acknowledgment is made of Applicant's claim for foreign priority to Japanese Patent Application No. 2004-085249, filed on March 23, 2003, under 35 U.S.C. 119(a)-(d). A certified copy of that application has been received.

### *Drawings*

2. Figures 9 and 10 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

### *Claim Rejections - 35 USC § 102*

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

4. Claims 1-3, 5-6 and 9 are rejected under 35 U.S.C. 102(e) as being anticipated by Higuchi et al., U.S. Patent No. 7,261,971.

*Regarding claim 1*, Higuchi discloses a film covered electric device (Abstract) comprising:

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- an electric device element [5] to which a positive pole lead and a negative pole lead [54, 55] are connected (Abstract; 9:42-47);
- and a casing film [3, 4] having at least a metal layer (3:63-67) and a thermally sealable resin layer laminated to each other (10:65-11:8), said casing film sandwiching said electric device element from both sides in its thickness direction with said thermally sealable resin layer being placed inside, wrapping said electric device element, and being thermally sealed around said electric device element to seal said electric device element with said leads extended therefrom (Abstract; Figs. 1, 3),
- wherein said casing film has a cup area [31, 41] for receiving said electric device element therein, whereby a thermally sealed area formed by thermally sealing said casing film is positioned between both surfaces of said electric device element in the thickness direction in regard to the thickness direction of said electric device element (9:42-47; 10:25-27; Figs. 1),
- at least one of sides of said casing film, from which said leads are not extended, is formed with a close contact zone [gap C] in which said casing films directly opposing without intervention of said electric device element are in close contact with each other without being thermally sealed, between said thermally sealed area and said electric device element, and  $L2 \geq (\frac{1}{2}) L1$  is satisfied, where L1 is a distance from one end to the other end of an inner edge of said thermally sealed area and L2 is the length of said close contact zone in a direction along the side formed with said close contact zone (11:17-38; Figs. 1, 3, 7, 8).

*Regarding claim 2*, Higuchi discloses that the close contact zone is formed at a position including a center of a range from one end to the other end of an inner edge of said thermally sealed area on the side formed with said close contact zone (11:17-38; Figs. 1, 3).

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*Regarding claim 3*, Higuchi discloses that the close contact zone is formed over the entire range from one end to the other end of the inner edge of said thermally sealed area on the side formed with said close contact zone (11:17-38; Figs. 1, 3).

*Regarding claim 5*, Higuchi discloses that the close contact zone is formed along all sides of said casing film from which said leads are not extended (5:41-44, 11:17-38; Figs. 1, 3).

*Regarding claim 6*, Higuchi discloses that the cup area is formed on both sides in the thickness direction of said electric device element (9:42-47; 10:25-27; Figs. 1).

*Regarding claim 9*, Higuchi discloses that the electric device element is a chemical cell element [battery with an electrode body 5 and an electrolyte] (Abstract; 9:42-47).

### ***Claim Rejections - 35 USC § 103***

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. Claim 4 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Higuchi et al.

Higuchi is applied and incorporated herein for the reasons above.

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*Regarding claims 4 and 7*, Higuchi does not expressly teach that close contact zone has a width which continuously or discontinuously varies such that the width is largest at the center in the range from one end to the other end of the inner edge of said thermally sealed area on the side formed with said close contact zone; or, that the close contact zone has a width of 0.5 mm or more.

However, Higuchi does teach a circumferential side 31c which forms a side of a depression 31 can be inclined at a prescribed obtuse angle (90 to 130 degrees) relative to a flange portion 32 or a bottom surface 31d of a depression 31 (11:17-22; Figs. 3, 5). A circumferential side 41c which forms a side of a depression 41 of the metal lid 4 may be inclined at a prescribed angle (90 to 180 degrees) relative to a flange portion 42 of the metal lid 4 or a bottom surface 41d of a depression 41 (11:22-27; Figs. 3, 5). By doing this, a gap C produced between an inner surface of a can and an electrode body 5 at a corner in the battery can 2 is increased slightly and, therefore, to that extent, a space which can be utilized as a reservoir for an electrolyte is increased and, as a result, an amount of an electrolyte to be injected into the battery can 2 can be increased (11:27-33; Figs. 3, 5).

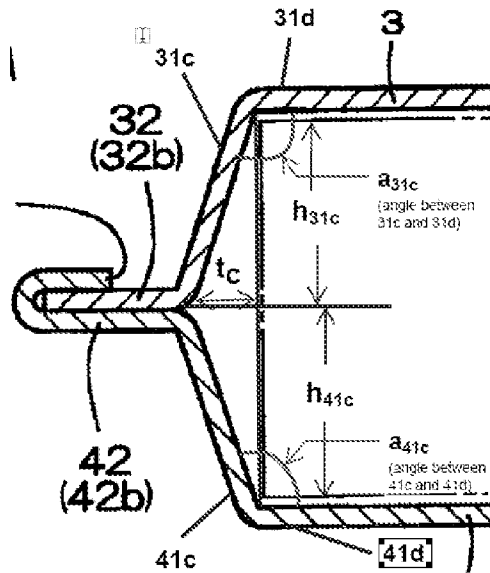
One of ordinary skill in the art would appreciate that the width of the gap C of Higuchi can vary from approximately 0 to 2.27 mm by varying the angles of the side walls of the depressions 31, 41 of Higuchi. That artisan would also appreciate that Higuchi expressly teaches a close contact zone (the gap C) of 1.48 mm. (See the calculations below.)

It has been held that obviousness exists where the claimed ranges overlap or lie inside ranges disclosed by the prior art. See MPEP 2144.05 (I). Further, the courts have held that, where the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation. See MPEP 2144.05 (II).

*Calculations:*

Higuchi teaches that the battery can have a thickness of 3 mm or less (5:45-47). The reference also teaches that both of thicknesses of a can body 3 and a metal lid 4 may be 0.2 mm or smaller, more preferably around 0.15 mm (8:1-2).

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Thus,

$$(t_c) / [\sin (a_{31c}-90)] = (h_{31c}) / [\sin (180 - (90+(a_{31c}-90)))]$$

$$(t_c) / [\sin (a_{41c}-90)] = (h_{41c}) / [\sin (180 - (90+(a_{41c}-90)))]$$

$$h_{31c} + h_{41c} = (3-2(0.15)) \text{ mm}$$

In an example from Higuchi, a circumferential side 31c of a can body 3 is formed by inclining at an angle of 120 degrees relative to its bottom surface 31d, and a circumferential side 41c of the metal lid 4 is formed by inclining at an angle of 175 degrees relative to its bottom surface 41d, respectively (11:33-38). So,

$$t_c = 0.58h_{31c}; \text{ and, } t_c = 11.43h_{41c};$$

$$h_{41c} = 0.0507h_{31c};$$

$$1.0507h_{31c} = 2.7 \text{ mm}; \text{ and,}$$

$$h_{31c} = 2.57 \text{ mm, so } t_c = 1.48 \text{ mm.}$$

Further, as  $a_{31c}$  and  $a_{41c}$  approaches  $90^\circ$ ,  $t_c = 0 \text{ mm}$ . And, if  $a_{31c} = 130$  and  $a_{41c}$  approaches  $180^\circ$ ,  $t_c = 2.27 \text{ mm}$ .

8. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Higuchi et al. in view of Yata et al., U.S. Patent Application Publication No. 2003/0081395.

Higuchi is applied and incorporated herein for the reasons above.

Regarding claim 8, Higuchi teaches the total thickness of its battery, used for small electronic devices, is 3 mm or less (Title; 5:45-47).



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Higuchi does not expressly teach that the electric device element has a thickness of 6 mm or more.

Yata teaches a flat, non-aqueous secondary battery having positive and negative electrodes and a negative electrolyte for use in portable devices, household energy storage systems, and in the energy system of an electric vehicle or the like has a thickness of preferably less than 12 mm, more preferably less than 10 mm, and still more preferably less than 8 mm (para. 3, 71-72). The lower limit of the thickness, 2 mm or more, is practical when considering the packing efficiency of electrode and the size of a battery (para. 72).

It would have been obvious to one of ordinary skill in the art at the time of the invention to form the battery of with a thickness of 6 mm or more, as taught by Yata, to design the battery that both has the capacity to provide adequate power the load to which it is attached, and has a maximum thickness at which an sufficient radiation of heat away from the battery is obtained thereby reducing the possibility of fluctuations of charge capacity and voltage (see Yata, para. 71-72).

9. Claim 10 is rejected under 35 U.S.C. 103(a) as being unpatentable over Higuchi et al. in view of Onda et al., Japanese Patent Application Publication No. 2001-052748 (cited in IDS), and Fukuda et al., U.S. Patent No. 6,972,216.

Higuchi is applied and incorporated herein for the reasons above.

*Regarding claim 10*, Higuchi teaches a method of manufacturing a film covered electric device, comprising the steps of: sandwiching an electric device element to which a positive pole lead and a negative pole lead are connected by a casing films having at least a metal layer and thermally sealable resin layer laminated to each other from both sides in a thickness direction of the electric device element (Abstract; 3:63-67, 10:65-11:8; Figs. 1, 3); and thermally sealing peripheral sides of the casing film which sandwiches said electric device element with the leads being extended from said casing films to seal the electric device element within said casing film (10:41-47, 10:58-64; Fig. 3).

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Higuchi does not expressly teach that the step of thermally sealing the casing film is accomplished by at least the last one side of the peripheral sides being thermally sealed in a reduced pressure atmosphere and returning surroundings of the casing film which seals said electric device element into an atmospheric pressure; or, applying pressure to the casing film with a thermal sealing head for heating and pressurizing said casing films being placed at a position spaced apart by 2 mm or more from said electric device element.

As to at least the last one side of the peripheral sides being thermally sealed in a reduced pressure atmosphere and returning surroundings of the casing film which seals said electric device element into an atmospheric pressure, Onda teaches a sealing process for a non-aqueous electrolyte battery encased by a laminate film where the welding of the periphery of the film is undertaken in a at pressures below than atmospheric, such as 0.5 atm or less, and returned to atmospheric once it is completed (para. 3, 13-16, 27, 29; claims 1, 4-6).

One of ordinary skill in the art at the time of the invention would have found it obvious to seal the casing film of Higuchi in the manner taught by Onda because it can improve adhesion between the electrode plate groups and thereby improve battery characteristic (see Onda, para. 15).

As to applying pressure to the casing film with a thermal sealing head for heating and pressurizing said casing films being placed at a position spaced apart by 2 mm or more from said electric device element, Fukuda teaches heat-sealing machine with sealing heads used to hot seal the tabs of a polymer battery module (Abstract). The polymer battery module is a laminated structure composed of nylon/bonding layer/aluminum layer/bonding layer/polyethylene layer (4:13-18). The sealing heads are used to effectively apply pressure and heat necessary for sealing and preventing unsealed gaps (3:42-51).

Further, Higuchi does teach, as discussed above with respect to claims 4 and 7, that a close contact zone about the periphery of the electric device element of 2 mm can be formed.

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One of ordinary skill would appreciate that the distance of the thermal sealing heads from the electric device element during the sealing of the casing film dictates the width of the close contact zone formed.

Therefore, it would have been obvious to apply pressure to said casing film of Higuchi with a thermal sealing head for heating and pressurizing the casing films, as taught by Fukuda, with the thermal sealing heads being placed at a position spaced apart by 2 mm or more from said electric device element of Higuchi, to form a seal of its casing film because it is known in the art as a sealing method that prevents the occurrence of prevents unsealed gaps.

***Correspondence / Contact Information***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Edu E. Enin-Okut** whose telephone number is **571-270-3075**. The examiner can normally be reached on Monday-Thursday, 8 a.m. - 4 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Susy Tsang-Foster can be reached on 571-272-1293. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Edu E Enin-Okut/  
Examiner, Art Unit 1795

/Susy Tsang-Foster/  
Supervisory Patent Examiner, Art Unit 1795